

Electricity/Electronics

Subject/Course: Electronics

Grade (s): 10, 11, 12 Designer (s) Jerry Taylor

Stage 1: Desired Results

Core Standard(s):

ELTRON4.2.

Calculate and measure, voltage, current, and power solutions in circuits

Understandings: Students will understand that....

Voltage, current, and power are proportional in any type of circuit. Individual unknown values may be predicted by calculations and proven by measurements.

Essential Question(s):

- What are the resulting affects on current and power as circuit voltage is altered?
- Explain how power dissipation requirements influence circuit design?
- Use Ohm's Law to predict voltage and current through is a circuit, and calculate power dissipation.

Students will know....

Student will be able to

- Application of Ohm's Law formulas to predict voltage, current, and power solutions in circuits.

- Employ measurement equipment to compare the predicted voltage, current, and power values to the actual values in the circuit.

Stage 2: Assessment Evidence

What evidence will show that students understand?

X	Performance Task	X	Project	X	Quizzes
X	Tests	X	Informal Observations	X	Discussions
	Interviews	X	Self-Assessment		Other

Stage 3: Learning Plan

Motivation – Introduce and Explain

How will you help students know *where* they are headed and why? How will you *hook* students through engaging and thought-provoking experiences that point toward big ideas, essential questions, and performance tasks?

Beginning with basic concepts layers are added to the curriculum as practical applications of the concepts are demonstrated and added to the discussion. Using both hands-on and computer simulations students are encouraged to transfer theoretical discussions into actual experiences.

Model (Teacher presentation):

What instruction is needed to *equip* students for final performance?

- Hierarchy of math functions and Calculator function review
- Explanation and demonstration of Ohm's Law applications
- Demonstration of test equipment functions
- Practice time for all aspects of the lessons so students may internalize lessons learned

Guided and Independent Practice (Student Engagement):

What events can students *experience* to make the ideas and issues real? What learning activities will help student

to *explore* the big ideas and essential questions?

- **Hands on activities where theories are applied and results can be verified**
- **Computer simulations for applications of theories**
- **Students have the opportunity to experiment with circuits in order to make their own observations**

Reflection/Assessment:

How will you cause students to *reflect* and *rethink* to dig deeper into core ideas? How will you guide students in *rehearsing*, *revising*, and *refining* their work based on feedback and self-assessment? How will students *exhibit* their understanding about their final performances and products? How will you guide them in *self-evaluation* to identify the strengths and weaknesses in their work and set future goals?

- **Beginning with guided lab activities students are introduced to theory application, these guided activities progress into open activities which allow students to explore their own thought processes.**
- **Ask open ended questions on written assessments that require them to put their thought process into words**
- **Provide hands on assessments that require students to identify the problem within system that inhibits correct operation**